

We claim:

1. A process for reducing the moisture content of organic material to a level at which said material is suitable for use as a fuel including the steps of:

(i) providing a starting material of organic material;

(ii) introducing said material into a comminuting chamber having an interior space defined, in part, by side and lower walls and allowing said material to fall downwardly into said interior space;

(iii) causing said falling material to strike said side wall with sufficient force to cause separation thereof into a first fraction which contains essentially water; and a second fraction which contains the material less the water in said first fraction;

(iv) providing means by which said first fraction may discharge from said chamber;

(v) causing air to flow through said chamber with sufficient velocity to carry said second fraction and any undischarged first fraction outwardly from said chamber and into a separator having an interior wall;

(vi) causing air within said separator to drive said second fraction from step (v) into contact with said interior wall with resulting separation of said second fraction from air and any undischarged first fraction from step (v);

(vii) adjusting at least one of: (a) the speed at which the waste material strikes the side wall of step (iii); (b) the rate at which the waste material of step (ii) is added to the chamber; (c)

the temperature within the chamber; (d) the temperature of the air within the separator; and (e) the rate of velocity of the air in step (v) in order to reduce the proportion of water in the second fraction from step (vi) to less than about 15 percent by weight; and (viii) recovering said second fraction from step (vi) as a final product.

2. The process of claim 1 further including the step of adjusting the moisture content of the starting material of step(i) to no more than about 60 percent by weight water;
3. The process of claim 1 further including the step of adjusting the moisture content of the starting material of step(i) to no more than about 40 percent by weight water;
4. The process of claim 1 further including the step of: (ix) separating said final product from step (viii) into a first portion of larger than about 250 microns composed substantially entirely of wood fibre and a second portion of smaller than about 250 microns containing composed substantially entirely of clay
5. The process of claim 1 including the step of: (x) providing impelling means located within said interior space for causing said falling material of step (iii) to strike said side wall.
6. The process of claim 5 wherein chains as provided as said impelling means
7. The process of claim 5 wherein a plurality of pivotally mounted blades are provided as said impelling means.
8. The process as claimed in claim 7 further including the step of selecting rigid elements which have a relatively low coefficient of drag.

9. The process as claimed in claim 7 further including the step of selecting rigid elements which have a cross-section in the shape of a tear drop.
10. The process of claim 1 further including the step of providing a torus having a conical upper wall and a planar lower wall within said chamber for directing said falling material centrally through said chamber.
11. The process of claim 10 further including the step of providing a plurality of baffle plates beneath said torus for directing the flow of said falling material beneath said torus.
12. The process of claim 11 wherein each said baffle plate has a forward and rear wall, the angle between the forward walls of adjacent said baffles being approximately 45 degrees.
13. The process of claim 12 wherein the angle between the forward wall of each said baffle plate and the lower of said torus is approximately 120.
14. The process of claim 1 further including the step of: (xi) combining a mixture of primary material containing pulp and paper sludge and a secondary material containing wood pulp having a substantial bacterial content with at least an equal weight of de-inking material to produce the starting material of step (i).
15. The process of claim 1 further including the step of: (xii) recycling sufficient quantity of the second fraction from step (viii) to the material of step (i) to produce said starting material.
16. The process of claim 1 further including the step of (xiii) adjusting the temperature in said interior space to a value in the range of about 45 to about 80 degrees Celsius.

17. The process of claim 16 wherein the temperature in said interior space is adjusted to a value the range of about 50 degrees to about 65 degrees Celsius.
18. The process of claim 1 wherein said separator is a cyclone separator.
19. The process of claim 1 wherein said organic material is pulp and paper sludge.
20. The process of claim 1 wherein said organic material is manure.